

AMENDMENT(S) TO THE SPECIFICATION

Please delete the Title located at the beginning of the specification and substitute therefor the following Title: "PAPER MACHINE DEWATERING SYSTEM WITH PRESS BELT".

Please delete the paragraph beginning on page 6, line 17 and substitute therefor the following paragraph, which contains markings to show all of the changes relative to the previous version of the paragraph:

Forming roll 34 may be solid or permeable. Moisture travels through forming ~~fiber~~ fabric 26 but not through structured fabric 28. This advantageously shapes structured fibrous web 38 into a more absorbent web than the prior art.

Please delete the paragraph beginning on page 10, line 5 and substitute therefor the following paragraph, which contains markings to show all of the changes relative to the previous version of the paragraph:

Dewatering fabric 82 may have a permeable woven base fabric connected to a batt layer. The base fabric includes machine direction yarns and cross-directional yarns. Fig. 19 is a side illustration of a preferred embodiment of the present invention, included is a woven single layer base fabric 84. Base fabric 84 includes machine direction yarns 88 and cross direction yarns 90. Yarn 88 is a 3 ply multifilament twisted yarn. Yarn 90 is a monofilament yarn. Yarn 88 can also be a monofilament yarn and the construction can be of a typical multilayer design. In either case, base fabric [[50]] 84 is needled with fine batt fiber 86 having a weight of less than or equal to 700 gsm, preferably less than or equal to 150 gsm and more preferably less than or equal to 135 gsm. The batt fiber encapsulated the base structure giving it sufficient stability. The needling process can be such that straight through channels are created. The sheet contacting surface is heated to

improve its surface smoothness. The cross-sectional area of the machine direction yarns is larger than the cross-sectional area of the cross-direction yarns. The machine direction yarn is a multifilament yarn that may include thousands of fibers. The base fabric is connected to a batt layer by a needling process that results in straight through drainage channels.

Please delete the paragraph beginning on page 14, line 17 and substitute therefor the following paragraph, which contains markings to show all of the changes relative to the previous version of the paragraph:

Now, additionally referring to Fig. 15, there is shown yet another embodiment of the present invention, which is substantially similar to the embodiment shown in Fig. 13, but including a boost dryer 70, which encounters structured fabric 28. Web 38 is subjected to a hot surface of boost ~~driver~~ dryer 70, structure web 38 rides around boost ~~driver~~ dryer 70 with another woven fabric 72 riding on top of structured fabric 28. On top of woven fabric 72 is a thermally conductive fabric 74, which is in contact with both woven fabric 72 and a cooling jacket 76 that applies cooling and pressure to all fabrics and web 38. Here again, the higher fiber density pillow areas in web 38 are protected from the pressure as they are contained within the body of structured fabric 28. As such, the pressing process does not negatively impact web quality. The drying rate of boost dryer 70 is above 400 kg/hrm² and preferably above 500 kg/hrm². The concept of boost dryer 70 is to provide sufficient pressure to hold web 38 against the hot surface of the dryer thus preventing blistering. Steam that is formed at the knuckle points fabric 28 passes through fabric 28 and is condensed on fabric 72. Fabric 72 is cooled by fabric 74 that is in contact with the cooling jacket, which reduces its temperature to well below that of the steam. Thus the steam is condensed to avoid a pressure build up to thereby avoid blistering of web 38. The condensed water is captured in woven fabric 72, which is dewatered by dewatering device 75. It

has been shown that depending on the size of boost dryer 70, the need for vacuum roll 60 can be eliminated. Further, depending upon the size of boost dryer 70, web 38 may be creped on the surface of boost dryer 70, thereby eliminating the need for Yankee dryer 52.

Please delete the paragraph beginning on page 15, line 12 and substitute therefor the following paragraph, which contains markings to show all of the changes relative to the previous version of the paragraph:

Now, additionally referring to Fig. 16, there is shown yet another embodiment of the present invention substantially similar to the invention disclosed in Fig. 13 but with an addition of an air press 78, which is a four roll cluster press that is used with high temperature air and is referred to as [[an]] a High Pressure Through Air Dryer ("HPTAD") for additional web drying prior to the transfer of web 38 to Yankee 52. Four roll cluster press 78 includes a main roll and a vented roll and two cap rolls. The purpose of this cluster press is to provide a sealed chamber that is capable of being pressurized. The pressure chamber contains high temperature air, for example, 150°C or higher and is at a significantly higher pressure than conventional TAD technology, for example, greater than 1.5psi resulting in a much higher drying rate than a conventional TAD. The high pressure hot air passes through an optional air dispersion fabric, through web 38 and fabric 28 into a vent roll. The air dispersion fabric may prevent web 38 from following one of the four cap rolls. The air dispersion fabric is very open, having a permeability that equals or exceeds that of fabric 28. The drying rate of the HPTAD depends on the solids content of web 38 as it enters the HPTAD. The preferred drying rate is at least 500 kg/hr/m², which is a rate of at least twice that of conventional TAD machines.

Please delete the paragraph beginning on page 18, line 11 and substitute therefor the following paragraph, which contains markings to show all of the changes relative to the previous version of the paragraph:

Now, additionally referring to Figs. 19-24, there are shown several embodiments of dewatering fabric 82 of the present invention. In Fig. 19, there is shown dewatering fabric 82 having a permeable woven base fabric 84 connected to a batt layer 86. Fabric 84 includes machine direction yarns 88 and cross-directional yarns 90. Machine direction yarns 88 may have a count of approximately 1,060/meter and cross-directional yarns may have a count of approximately 520/meter. Dewatering fabric 82, illustrated in Fig. 19, is a side illustration of a preferred embodiment of the present invention, included is a woven single layer base fabric 84. Base fabric 84 includes machine direction yarns 88 and cross direction yarns 90. Yarn 88 is a 3 ply multifilament twisted yarn. Yarn 90 is a monofilament yarn. Yarn 88 can also be a monofilament yarn and the construction can be of a typical multilayer design. In either case, base fabric [[50]] 84 is needled with fine batt fiber 86 having a weight of less than or equal to 700 gsm, preferably less than or equal to 150 gsm and more preferably less than or equal to 135 gsm. The batt fiber encapsulated the base structure giving it sufficient stability. The needling process can be such that straight through channels are created. The sheet contacting surface is heated to improve its surface smoothness. The cross-sectional area of machine direction yarns 88 is larger than the cross-sectional area of cross-direction yarns 90. Machine direction yarn 88 is a multifilament yarn that may include thousands of fibers. Base fabric 84 is connected to batt layer 86 by a needling process that results in straight through drainage channels 104.

Please delete the paragraph beginning on page 23, line 4 and substitute therefor the following paragraph, which contains markings to show all of the changes relative to the previous version of the paragraph:

Fabric 82 proceeds past showers [[30]], which apply moisture to fabric 82 to clean fabric 82. Fabric 82 then proceeds past a Uhle box, which removes moisture from fabric 82.